

ABSTRACT OF THE INVENTION

[0037] A methods of the present invention for inhibiting silica scale formation and corrosion in aqueous systems where soluble silica residuals (SiO₂) are maintained in excess of 200 mg/L, and source water silica deposition is inhibited with silica accumulations as high as 4000mg/L (cycled accumulation) from evaporation and concentration of source water. The methods of the present invention also provides inhibition of corrosion for carbon steel at corrosion rates of less than 0.3 mpy (mils per year), and less than 0.1 mpy for copper, copper alloy, and stainless steel alloys in highly concentrated (high dissolved solids) waters. The methods of the present invention comprise pretreatment removal of hardness ions from the makeup source water, maintenance of electrical conductivity, and elevating the pH level of the aqueous environment. Thereafter, specified water chemistry residual ranges are maintained in the aqueous system to achieve inhibition of scale and corrosion.